

**WE CLAIM:**

1. A method for producing an array of bands, each band representing a specific fraction of double stranded DNA having a calculated base-pair length, the method comprising:
  - 5 a) separating a mixture of double stranded nucleic acid fragments into base-pair length fractions by reversed phase ion pairing liquid chromatography wherein the separated base pair-length fractions are eluted from a chromatography column;
  - 10 b) detecting the separated base-pair length fractions as they elute from the column;
  - c) providing a digitized signal corresponding to the detected base-pair length fractions; and
  - d) converting the digitized signal into an array of bands, each band corresponding to a base-pair length fraction.
- 15 2. The method of Claim 1 including calculating the base-pair length of each of the fractions, and displaying the base-pair length of each fraction in association with the respective band.
3. The method of Claim 1 wherein the separated base-pair length fractions are detected by a UV detector, fluorescence detector or radioactivity  
20 detector.
4. The method of Claim 1 wherein the position of a band in the array of bands correlates to the number of base pairs of the DNA in a respective fraction.
5. The method of Claim 1 wherein the array of bands is displayed as an array  
25 of lines or rectangles.
6. The method of Claim 1 wherein each of the bands is displayed in color, and the color in each band correlates to the amount of fragments represented in each band.

7. The method of Claim 1 wherein each of the bands is displayed in a gray scale, and the level of the gray scale of each band correlates to the amount of fragments represented in each band.
8. An apparatus for producing an array of bands, each band representing a specific fraction of double-stranded DNA having a calculated base-pair length, the apparatus comprising:
- 5 a) a reversed phase ion pairing chromatography system for separating a mixture of double-stranded nucleic acid fragments into base-pair length fractions, wherein the chromatography system includes a chromatography column with an outlet at one end from which the separated base pair length fractions are eluted;
- 10 b) a detector positioned to detect the separated base-pair length fractions as they elute off of the column; and
- c) a computer and software to provide a digitized signal corresponding to the detected base-pair length fractions and to display the digitized signal as an array of bands, each band corresponding to a base-pair length fraction.
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9. The apparatus of Claim 8 wherein the computer and software calculate the base-pair lengths of each of the fractions.
- 20 10. The apparatus of Claim 9 wherein the computer and software display the base-pair length of each fraction in association with the respective band.
11. The apparatus of Claim 8 wherein the detector is a UV detector, fluorescence detector or radioactivity detector.
- 25 12. The apparatus of Claim 8 wherein the computer and software display the array of bands so that the position of a band in the array of bands correlates to the base-pair length of a respective fraction.
13. The apparatus of Claim 8 wherein the computer and software display the bands as an array of lines or rectangles.

14. The apparatus of Claim 8 wherein the computer and software display the bands in color, and the color in each band correlates to the amount of fragments represented in each band.
15. The apparatus of Claim 8 wherein the computer and software display the  
5 bands in a gray scale, and the level of the gray scale of each band correlates to the amount of fragments represented in each band.
16. The apparatus of Claim 8 wherein the computer and software calculate  
10 one or more of the base-pair lengths of the DNA in each fraction, the concentration of DNA in each fraction, or the separation time of each fraction for each band in the array of bands.